

DEPARTMENT OF HEALTH SERVICES

MEDICAL WASTE MANAGEMENT PROGRAM, MS 396

P.O. BOX 942732

SACRAMENTO, CA 94234-7320

(916) 324-6904 (916) 323-9869 fax



**Alternative Medical Waste Treatment Technologies
Approved by the California Department of Health Services**

Effective Date: March 13, 2003



This is an information document only. The information provided relative to each of the approved alternative treatment technology processes is general information. The Department of Health Services is in no way endorsing a technology or to be held liable for the information provided. Anyone interested in the products described in this document is encouraged to contact the company directly.

Alternative Technology Approval serves only as authorization for operation as otherwise required by the Medical Waste Management Act and attendant regulations. Sections 118130 and 118135 require that any offsite medical waste treatment facility obtain a permit from the Department before commencing treatment. Sections 117925 (a) and 117950 (a) require that generators apply to the enforcement for a treatment facility permit pursuant to Chapter 7.

Only specialized treatment devices or disposable technologies (products which treat medical waste and are then disposed along with the treated waste) that are noted in the list below to be permit-exempt do not require permits. Approved waste streams and specific physical or chemical conditions to be achieved during treatment are address on a case-by-case basis during the permitting process and become part of the permit itself.

Condor Healthcare Services (formerly the Winfield Condor Technology)

Condor Health Care Services, LLC (714) 456-0790 Office
1532 E. Kattella Ave John Chahine
Anaheim, CA 92805
www.condortechnology.com

The Condor Medical Waste Disinfection System is designed for on-site applications for disinfection of medical waste. The system incorporates a chlorine dioxide generation technology that is produced in situ for sodium chlorite and citric acid. The device uses mechanical shredding simultaneously with the chlorine dioxide for disinfection and destruction. The medical waste processed and disinfected by the CONDOR is confetti-like and can be disposed in solid waste landfills.

EARTH-SHIELD Company - Sharp-Shield Disposable Technology—Permit-Exempt

Joe A. Dendy, D.V.M. (661) 322-0300 Office
Earth Shield Company
304 Yampa Street
Bakersfield, CA 93307

This process is a point of generation disposable system for sharps waste only. Proper use of the system results in the sterilization of hypodermic needles, encased in a solid cementitious medium. The container may then be disposed of as solid waste. Sharp-Shield has been approved as a thermal treatment method in California, based on the heat generated during the encasement process. Sharp-Shield has also received Registration by the California Department of pesticide Regulation (DPR) as a chemical treatment.

Disinfection occurs when low concentrations of gaseous chlorine are slowly released by dry calcium hypochlorite present in the sharps container during use and storage. Needles placed in the container are sanitized within 24 hours.

GMS Marketing Services—Sterimed

Arye Addady
GMS Marketing Services
191 Hempstead Turnpike
West Hempstead, NY 11552

(516) 483-1403 Office
(800) Sterimed Office

The SteriMed infectious waste disinfecting disposal unit simultaneously shreds and mixes medical waste with a disinfecting solution composed of quarternary ammonium compounds and gluteraldehyde. By recirculating the mixture of medical waste and disinfectant, using a positive piston pump, the device assures multiple passes of the entire load through the shredder to increase the surface exposed to the disinfectant. Treated non-liquid medical waste is then separated for disposal as municipal solid waste and the liquid fraction is sewered.

Isolyser - ORexTM Processor

Mr. Travis W. Honeycutt
Isolyser
4350 International Boulevard, NW
Norcross, GA 30093

(404) 381-7566 Office
(800) 777-7977 Office

The ORexTM Processor treats biohazardous contaminated garments, linens, drapes and utensils made from the ORexTM polymer (polyvinyl alcohol). At 190° F for ten to 25 minutes (depending on load) the polymer is dissolved and pathogens destroyed (6 log₁₀ kill at 10 min.). The resulting mixture is then sewered. A button catcher intercepts sanitized solid objects such as buttons and surgical instruments. Achievement of sanitizing temperatures is confirmed by dissolution of the ORexTM material, which will not dissolve at lower temperatures.

Isolyser - Sharps Management System (SMS) Disposable Technology—Permit-Exempt

Mr. Travis W. Honeycutt
Isolyser
4350 International Boulevard, NW
Norcross, GA 30093

(404) 381-7566 Office

This process is a disposable system which is intended to be used on-site at the point of generation. When used properly, the containerized waste becomes encapsulated within the container and the waste may be disposed of as solid waste. Isolyser SMS may be purchased through medical and dental supply houses.

Kvaerner U.S. Inc. Successor to Mediclean Technology Inc., Medical Compliance Services, Inc.- Encore 2000 RWP

Mr. David Hahn, (508) 399-6400 Office
Vice President/ Sales and Marketing
Kvaerner U.S., Inc.
116 Roddy Avenue
South Attleboro, MA 02703-7974

The MCS Encore 2000 RWP treatment system uses the same technology as its predecessor the Mediclean Infectious Waste Processor, IWP - 1000. MCS states that they have improved Mediclean's processor by adding a shredder upstream to shred the medical waste in the presence of ClO_2 prior to granulation of the waste. The MCS medical waste processor uses ClO_2 which is approved by the Federal EPA and the California Department of Pesticide Regulation. The capacity of the system is approximately 2,000 pounds per hour of typical input waste.

Medical SafeTEC

Lynn Benson, Manager (801) 209-6582 Office
Medical Waste SafeTEC (801) 936-0112...Fax
330 West Center Street <http://www.medwastetec.com/>
North Salt Lake, Utah 84054

This system uses a hammer mill and sodium hypochlorite for grinding and disinfecting medical waste. Red bags and sharps waste are fed into the unit through the hopper. Once the waste is processed, the resulting waste is unrecognizable and is solid waste which may be disposed at a solid waste facility.

Medical Waste Safe TEC is distributed by Circle Medical Products, Inc. Jon Watson, General Manager 317-357-8080, and Haz Mat Terminators, Jerry Crump, President. CEO 650-962-9553.

Metrex Research Corporation, - PremiCide-CA Disposable Technology—Permit Exempt

A. J. LaSota, General Manager (800) 841-1428 Office
Metrex Research Corporation
1717 W. Collins Ave.
Orange, CA 92867

PremiCide-CA is a sanitizing encapsulant for liquid medical waste, labeled for use in California. The active ingredient is glutaraldehyde. This product is marketed for suction canister use, and is available in pre-measured quantities for 0.5, 1.2 1.5, 2.0 and 3.0 liter suction canisters, and in a calibrated container which will treat 10,000 ml. This product was tested in 20% serum, therefore waste from suction canisters containing a higher percentage of blood should be disposed of as medical waste.

Needlyzerä Specialized Treatment Device-Permit exempt
Clarke Lloyd (773) 528-2652 Office
International Marketing and Compliance
Healthcare Products Plus, Inc.
2119 North Kenmore Ave.
Chicago, IL 60614

The Needlyzer™ fuses metal hypodermic needles by means of an electric circuit created when the needle touches the two electrodes inside the unit. The resulting high temperature oxidation destroys organic matter on the needle. The resulting “swarf” (metal oxides) may be disposed of as solid waste.

PEAT, Inc (formerly Plasma Arc.)
Roy DuPree, (256) 859-3006 Office
Director of Marketing
PEAT, Inc.
4914 Moores Mill Road
Huntsville, AL 35811

Plasma arc reactors generate intense heat (12,000°F) through discharge of a powerful electrical arc (artificial lightning). The thermal energy generated by ionizing gasses is transferred to the waste, where at temperatures of 2000 to 3000°F, volatile constituents are vaporized while organic matter is fused into a glassy slag. After CO₂, HCL and oxides of sulfur are scrubbed, the gas (principally N₂, H₂, and CO) is flared. The vitreous slag, with heavy metals present sequestered within, may be landfilled or used in construction as rock substitute.

Plasma Enhanced Melter™
William J. Quapp (509) 946-5700
Director of Program Development (208) 535-9001
Integrated Environmental Technologies, LLC
1835 Butler Loop
Richland, WA 99352

The IET Plasma Arc Melter™ destroys medical waste in a chemically reducing environment at temperatures exceeding 1800°F. The system achieves a 12 log₁₀ pathogen kill in less than a second. Organic material (plastics, pathology, pharmaceutical and trace chemotherapy waste) is converted via steam reforming into virtually dioxin-free (<0.001% o California limit) synthesis gas. Any mercury in the gas is removed by specially-designed activated-carbon filters. The gas can be sold for the hydrogen value or used for on-site production of electricity and/or steam. The residual inorganic material (glass, ceramics, needles, ash) forms a leach resistant glass that will incorporate heavy metals if present in the waste stream. The estimated volume-reduction for typical wastes is over 95%. Units are operating in Hawaii and Japan. Additional information can be found at www.inentec.com.

PMA Services Inc. - MedClean-M

Mr Joseph T. Militello
PMA Services, Inc.
22347 La Palma Ave. Ste. 106
Yorba Linda, CA 92887

(714) 692-8533 Office
(714) 692-5478 Fax

This portable system uses dry heat (in excess of 500° Fahrenheit) to disinfect medical waste, including needles and syringes, petri dishes, culture plates and red-bag waste. The resulting block of plastic encases sharps, is unrecognizable as medical in origin, and may be disposed of as solid waste. The unit provides a printout of each cycle showing cycle time and temperature.

Roatan Redlock System

Ms. Suzanne Helton-Beck
Roatan
1022 Santerre Drive
Grand Prairie, TX 75050

(214) 647-4033 Office
(415) 871-6509 Fax

The Redlock sterilizer treats by pressurized steam generated inside a pressure vessel. Each sterilizer unit has the capacity to treat approximately 50 pounds per hour at the rate of 2 or 3 cycles per hour. The vessel is energized from the outside by two industrial 1.2 kW magnetron microwave generators to produce steam in a pressurized environment. Continuous monitoring determines the time of treatment, which varies dependent upon the load. Typical processing time is 20 minutes. The unit features reusable 25 gallon containers designed to fit within the pressure vessel for treatment.

Sanitec, Inc.- SANITEC HG-A-100, HG-A-250

Mr. Joseph Delloiacovo, President
Sanitec, Inc.
26 Fairfield Place
West Caldwell, NJ 07006

(800) 551-9897 Office

This system uses a microwave disinfection unit to treat medical waste. Two models are available; 100 kg/hr and 250 kg/hr throughput. The waste is shredded and heated sufficiently to render it noninfectious. The resulting waste is unrecognizable and may be disposed of as solid waste at a solid waste facility. Units are located in Sacramento, Oakland, and Costa Mesa, California.

Scientific Ecology Group, Inc. (SEG) - Synthetica Detoxifier Process

Mr. Bryan A. Roy, (423) 481-0222 Office
VP, Technology Applications (423) 482-7206 Fax
Scientific Ecology Group, Inc.
P. O. Box 2530
1560 Bear Creek Road
Oak Ridge, TN, 37831-2530

The Synthetica Detoxifier Process is a steam detoxifier that is designed to shred medical waste to a closely controlled size, and metering these shreds into a steam-reforming screw conveyor which acts to reduce the mass and sterilize the waste. The Synthetica Detoxifier chemically reacts carbonaceous substances (organic chemicals) with high temperature steam to produce a syngas. The syngas is then catalytically oxidized to CO₂ and water.

The STD system also includes exhaust treatment equipment to remove trace vapor contaminants prior to discharge and continuous monitoring equipment to assure compliance with federal, state and local regulatory levels.

Steris Corporation - EcoCycle 10 Processor

Mr. Paul Zamecnik, President (216) 354-2600 Office
Steris Corporation
9450 Pineneedle Drive
Mentor, OH 44060

The Steris Corporation, EcoCycle 10 Processor, uses STERIS 20 Decontaminant, STERIS-SW Decontaminant and STERIS-WL Decontaminant. The active ingredients include Peracetic Acid and other inert ingredients. The process uses a mechanical means to treat medical waste. The waste is placed in the treatment chamber and a fixed amount of the particular decontaminant is added. The cap is secured, water is added, and the chamber contents are ground for three minutes. Following physical destruction, the mixture is permitted to soak for seven (7) minutes, during which time the total destruction (99.9 %) of the microbial population is completed. The chamber contents are then rinsed, spin dried and drained. The resulting waste is ready for disposal as a solid waste.

Stericycle, Inc. - Electro-Thermal Deactivation

Richard T. Cogler, COO (847) 607-2070 Office
27161 N. Keith Drive
Lake Forest, IL 60045

This alternative treatment system uses low-frequency radio waves to disinfect medical waste. Low-frequency radio waves heat the moistened waste (~10% H₂O) sufficiently (90°C.) to kill viruses, vegetative bacteria, fungi, yeast, and most spores.

Thermal Waste Technologies, Inc. Demolizer System (Heat Sterilization)
(Formerly DOCC, Inc.)

Mr. Jon Bricken, President/CEO (203) 778-1139
Thermal Waste Technologies, Inc.
19 Stoney Hill Road
Bethel, CT 06801

The Demolizer System uses dry heat (350°F) to treat sharps and biohazardous waste. The processing unit is approximately the size of a microwave oven and can be plugged into any standard 110 volt, 15 amp. grounded electrical outlet. A one gallon sealed container filled with medical waste is placed in the unit. The unit will heat the waste to 350 degrees Fahrenheit for a period of ninety (90) minutes, after which the processed waste will be allowed to cool for thirty (30) minutes until reaching a safe handling temperature. The treated waste in its integral metal container can be disposed of as solid waste.

Thermal Equipment Corporation--Mediclave

Mr. Kenneth R. Earls (310) 328-6600 Office
Thermal Equipment Corporation
1301 W. 228th Street
Torrance, CA 90501

Mediclave[™] is a modification of conventional steam sterilization which applies high pressure (150 psi), high temperature (350°F) steam within a jacketed pressure vessel. At this elevated temperature, the treatment cycle is shortened allowing 300 lb./hour throughput in a three-foot diameter unit. At the end of the cycle, a hydraulic ram within the unit compresses the super-heated waste into an eight-inch-by-three-foot diameter disk which can be recycled or landfilled. There is one unit located in southern California, but it is not operational.

Thermokill, Incorporated - Heat Sterilization

Mr. Michael J. Gaylor (800) 483-1111 Office
Thermokill, Inc.
400 Douglas Avenue, Suite C
Dunedin, FL 34698

This treatment technology is designed to grind the waste as to be unrecognizable and sterilizes the waste by an internal temperature of 340 to 360 degrees Fahrenheit for 30 minutes. The treatment unit can treat up to 1000 pounds per hour of medical waste. The Thermokill process involves the use of steam for cooking the waste. However, the steam is fed into the shell side of the "thermal screw" thereby having no direct contact with the waste. The condensate from the steam is returned to the boiler feed tank and is re-used. There is no discharge of liquid to a sanitary sewer or the groundwater.

Tempico, Incorporated – Rotoclave

Blake Harrison

(504) 845-0800

Tempico, Inc.

P.O. Box 428

251 Hwy 21 North

Madisonville, LA 70447

The Tempico Rotoclave[®] is a pressure-vessel steam sterilizer which features an Internal rotating waste “mixer” which mixes and partially breaks up the waste, providing more efficient exposure of waste to steam and speeding treatment. Tempico offers an ancillary waste processing system which further shreds and processes the treated waste rendering it “unrecognizable” as healthcare-generated waste. Because it is an autoclave, the Rotoclave[®] may be operated either under Section 118215 (a)(2) operating parameters, or according to operating conditions specified in its alternative technology approval. The Rotoclave is available in several models ranging in capacity from 250 pounds per hour to well over 2000 pounds per hour.

WR² – ChemClave

Randall G. McKee

(317) 484-4200 Office

Sterile Technology Industries, Inc.

(317) 484-4201 Fax

5711 W. Minnesota Street

Indianapolis, Indiana 46241

STI Chem-Clav is a medium to high throughput continuous-feed ambient pressure steam treatment system. Models are presently available that can treat 300, 600, 1000, 2000, 3000, and 4000 pounds per hour. Bagged or containerized waste is shredded in the presence of dilute sodium hypochlorite (approved by FIFRA and California Department of Pesticide Regulation as an equipment sanitizer). The shredded waste is augured through a steam-jacketed tunnel for treatment. The waste is initially bathed in steam that is released into the auger from the interior of the jacket and from the central shaft of the auger. The waste is then dried as it passes through a second portion of the steam jacket that does not release steam, but uses the high temperature of the jacket to flash-off the moisture. The “unrecognizable” treated waste is automatically deposited into an interconnected compactor for disposal as solid waste.

WR² – Tissue Digestor

Waste Reduction by Waste Reduction Inc

(317) 484-4200 Office

5711 W. Minnesota Street

(317) 484-4201 Fax

Indianapolis, Indiana 46241

WR² Model 100 Series Alkaline Hydrolysis Tissue Digestion System is a batch-feed pressure-vessel treatment system that relies on both thermal and chemical activity to inactivate pathogens. Models presently available can treat between 50 and 10,000 pounds of carcasses or tissue per cycle. Waste is treated in stoichiometric amounts of ~1N alkali at 250-300 ° C for a minimum of three hours, achieving digestion and dissolution of protein and lipid matter. The liquid residue may be sewered in conformance with local POTW requirements. Solid residue (remaining inorganic bone material) may be disposed as municipal solid waste, or recycled as fertilizer

Conditions of Alternative Technology Approval

Alternative medical waste treatment technology approval is accomplished under the authority of Chapter 8 of the Medical Waste Management Act. Approval is subject to and requires strict adherence to the operations protocol submitted in the alternative technology application.

Pertinent language in Section 118215 requires that "A person generating or treating medical waste...ensure that the medical waste [be] treated, thereby rendering it solid waste...prior to disposal. This approval, granted pursuant to subdivision (d), requires that the alternative treatment method be both of the following:

- "(A) Approval by the Department;
- (B) Result in the destruction of pathogenic organisms..."

A technology's compliance with subdivision (B) shall be dependent on the continuing operation of these technologies will remain subject to the outcome of any inspections as may be required by the Department.

Alternative Technology Approval serves only as authorization for operation as otherwise required by the Medical Waste Management Act and attendant regulations. Sections 117925 (a) and 117950 (a) require that generators operating certain technologies apply for a treatment facility permit pursuant to Chapter 7.

For additional information on requirements for use of these alternative treatment technologies, please contact your local health or environmental health agency or the California Department of Health Services, Medical Waste Management Program, Sacramento office at (916) 327-6904, or by fax at (916) 323-9869.